

COST *and* MANAGEMENT

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COST ACCOUNTANTS & INDUSTRIAL ENGINEERS

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EDITORIAL

World Business

The recession in the United States continues to be just about the most disturbing factor in world business to-day and until conditions in that country change for the better, business in Canada or elsewhere is not likely to make a complete recovery. Canada has shown that despite a recession in the U. S. we can, to some extent, continue to make recovery but it is hardly complete and in fact, may be lessened unless something is done quickly to balance the U. S. situation.

Experts claim for Canada that business this year is likely to be about as good as it was last year and if this is true, business for the last half of the present year will have to take a real jump because right now conditions are not so good as they were in the latter half of last year. We have, to some extent, been affected by the situation in the U. S., caused primarily by the fact that costs in important industries were increased by no less than twenty-five per cent. by the very violent changes in wages and hours due to the advent of the C. I. O.

The National income in the U. S. increased by only ten per cent. so that everything was thrown out of balance with the consequent unsettling results of to-day. There were, of course, other contributing factors. In the early part of last year when prices were rising rapidly, large scale buying was the order in most industries and production naturally had to taper off eventually with the inevitable result that prices began to fluctuate downward with a further result that buying decreased, so far as large scale buying is concerned. Then too, there is more than a suspicion that an attempt was made to "put President Roosevelt in his place". The fact remains, however, that violent changes in wages and hours with the consequent rapid increase in production costs had a lot to do with the present recession and while one would like to see the purchasing power of those in the lower brackets increased, this was not done last year and in fact was hardly in itself attempted.

As a matter of fact, it does appear that in the U. S., the redistribution of national income became even more lop-sided than ever as a result of the actions of certain well entrenched labour organizations, who by sit down strikes and the like, exerted considerable pressure in favour of higher wages and shorter hours, without thought for other sections of the community. What these people have yet to learn is that when a rise in prices results from a jump in wages, there is no jump in wages, in fact, very often it is a drop.

AT HEADQUARTERS

United States industrialists appear to have very definitely proved the fact that business will not function without at least reasonable profits. So far as labour organizations are concerned, we feel that they can exert a very definite influence, for good, if they so desire, but in the U. S. they have shown little desire to do that and so far their influence has been in the opposite direction. There is a distinct feeling, however, that business is showing signs of emerging from its temporary recession and that very shortly matters will assume a much brighter aspect. But, if the C. I. O. once more raises its head as last year, there will soon be other and worse recessions.

At Headquarters

Things are looking up, says a popular song, and we can say with every truth that things are looking up with our society.

The proposed new London Chapter is now an accomplished fact and the Niagara Peninsula Chapter is now also established so that so far this year, three new chapters have been organized. In this issue the one hundredth new member obtained since September last is listed and it is hoped and expected that many others will be secured before the financial year ends on April 30.

In this connection may we pay a tribute to many members of the society who have assisted in many ways both in the matter of new members and in the organization of new chapters. In the latter case, speakers have been needed, still are for that matter, but so far nothing has fallen down in this connection and next season a real determined effort will be made to formulate the programs of all chapters prior to the start of the season. It is hoped also that we may publish these programs together with a list of officers of each chapter and of the Society and with some details concerning the work of the society, the by-laws, etc., in brochure form.

Reverting back to the matter of new members, present members can assist very materially in this regard by giving the Secretary the names of prospective members or by even signing up such prospects themselves. If each member would endeavour to secure only one new member during the balance of our financial year, our membership would show a remarkable increase and IT CAN BE DONE.

All chapters continue to show remarkably good attendances at meetings which are bright, well-conducted and very informative.

There will be no let-up in our attempt to boost the society from every angle. Members generally are taking a very active interest in the work of the society which is indeed a real sign.

Chapter Notes

Montreal.

On February 25th., the Montreal Chapter conducted its annual Student Night with the following program:

Four Short Papers (eight minutes each)

"Production Costs from a Control Post"—G. E. Rochford, Canadian Marconi Co. Ltd.; "Cost Accounting by the Machine Method"—G. W. Kemp, R. C. A. Victor Co. Ltd.; "Earned Hours Wage System"—J. J. McGill, The Steel Co. of Canada Ltd.; "Graphic Charts in Cost Work"—J. A. Blair, Canadian Marconi Co. Ltd.

Debate—Oregon Method—

Resolved—"That Governments Should Participate in the Regulation of Wage Rates".

Affirmative—Advanced Cost Accounting Class. A. B. Brodie, Dominion Rubber Co. Ltd.; Patrick Wells, Sun Life Assurance Co.; Jas. Ariott, Consolidated Paper Co.

Negative—Industrial Management Class. A. A. Reid, Sun Life Assurance Co.; J. D. Webb, Jenkins Bros. Ltd.; G. Chaplin, Can. Tube & Steel Company.

Convenor of Debate, P. W. Wright.

Judges, Professor R. R. Thompson, L. Belanger and L. N. Buzzell. Student Chairman, J. D. Wilby, Canada Creosoting Co.

It was a grand night and in the debate the affirmative side won by a very close margin.

On March 11th., another big night in the history of the society is expected when Mr. Elmer J. Kosh, Secretary of the United Typothetae of America Inc., will speak on "Costs in the Printing Industry". It is hoped to publish the text of Mr. Kosh's remarks in a future issue of Cost and Management.

Toronto.

On February 22nd, Mr. Walter Lattman, Assistant to the President, Massey-Harris Co. Ltd., Toronto, addressed members of the Toronto Chapter on the subject, "Some Difficulties in Export Trade". The text of Mr. Lattman's remarks appear elsewhere in this issue so that nothing further along these lines need be said except that Mr. Lattman proved himself a fluent speaker with a wide knowledge of his subject and the members thoroughly enjoyed his talk which was just a little different. Seventy-seven members were present which is somewhat lower than the three previous meetings but still, under the circumstances, very commendable.

The next meeting of this chapter will be preceded by a plant visit to the remarkably fine plant of the Canada Wire & Cable Co. Ltd., at Leaside and a large crowd is expected.

Hamilton.

On February 23rd, no less than seventy-seven members and friends of the Hamilton Chapter gathered to hear Mr. R. H. Rositzke, of New York City, speak on "Measured Daywork in Its Relation to Better Business."

Mr. Rositzke proved himself a remarkably fine speaker and dealt in

CHAPTER NOTES

the first part of his address on "Job Evaluation", a phase in which the members showed a keen interest.

On March 9th, a good number of members were present to hear Mr. W. R. Ingram, Director Swift Canadian Co. Ltd., Toronto, who spoke on "Pioneering in Social Security for Employees". Mr. Ingram dealt with the various Social Security plans of the company at length and those present enjoyed his talk to the full.

The Hamilton Chapter members along with many from Kitchener and the Niagara Peninsula travel to Buffalo for the next meeting. This is a joint meeting with the Buffalo Chapter, N. A. C. A., and it is anticipated that a record crowd will attend.

Kitchener.

The Last meeting of the Kitchener Chapter produced a somewhat better attendance than on the occasion of the previous meeting and those who gathered to hear Mr. R. F. Bruce Taylor, C. A., speak on "Annual Financial Statements and the Relation of the Accountant to the Auditor" were well rewarded. Mr. Taylor, as always, gave a very interesting talk and his visit to Kitchener will always be looked forward to with considerable pleasure. On March 17th, Mr. A. Sankoff, of the Canadian Westinghouse Co. Ltd., will address members of the chapter on Wage Incentives and Cost Control and it is to be hoped that the members will turn out in full force for this meeting.

London.

On March 2nd, at the Hotel London, over forty were present at the inaugural meeting of the new London Chapter. Mr. R. Dawson, Secretary Manager of the Society, spoke on "Cost Accounting and Modern Industry" and his remarks were listened to with rapt attention. At the conclusion of his talk Mr. Dawson spoke on the work of the society, its aims and objects and immediately following this, officers were elected for the balance of the present year. These were:

Chairman, R. L. C. Keith, Kelvinator of Canada Ltd.; Vice-Chairman, J. J. McLaughlin, Maxwell's Ltd., St. Mary's; Secretary-Treasurer, W. C. Benson, C. A., Oscar Hudson & Co.; Directors, F. Ware, Murray Shoe Co., S. T. Rowe, Wright Lithographing Co., R. C. Henderson, Somerville Paper Boxes Ltd., and D. J. H. Ferguson, Holeproof Hosiery Co. of Canada Ltd.

Niagara Peninsula.

On Friday, March 4th, over forty gathered at the Reeta Hotel, Welland, to hear Mr. E. M. Detwiler of Buffalo, who spoke on "The Control of Maintenance Expenditures". Mr. Detwiler's address is published elsewhere in this issue and he proved a real favorite with those in attendance who asked many questions at the close. Provisional directors of this new chapter are: H. W. Spry, Canadian Atlas Steels Ltd., J. McLaren, Foster Wheeler Co. Ltd., F. A. Haultain, Interlake Tissue Mills Ltd., W. E. Drexel, Thompson Products Ltd., and C. K. Souder, Hart & Cooley Mfg. Co. Ltd.

Literature Received

Burden Application.

Journal of Accountancy. March.

A very complete and well written article by M. B. Cogburn and one which every accountant and cost accountant should read and digest.

Comparative Percentages of Manufacturing Costs.

Chartered Accountant in Australia. January.

This article has been written to point out the care which should be taken in drawing conclusions from comparative percentages of manufacturing costs. Since such percentages are frequently embodied in reports prepared for the information of persons who are unskilled in accounting the matter is of considerable interest to those engaged in the preparation of such reports.

Cost Accounting for Repairs.

The Cost Accountant. January.

A short but informative article on a much vexed subject written by Andrew Miller, F.C.W.A.

Production Costs and the Sales Department.

The Accountant. January 29.

A short article of real interest which points out the necessity of complete co-ordination between the Producing and Sales Departments to ensure efficient functioning of both departments.

Accounting for an Interurban Motor Coach Company:

Canadian Chartered Accountant. March.

This article was awarded first prize in the 1937 Essay Competition sponsored by the Canadian Chartered Accountant. Written by Harold S. Moffett, B.Acc., C.A., and is extremely interesting to those who have had occasion to deal with such companies.

The Statistical Control of Business Activities.

Canadian Chartered Accountant. March.

An exceedingly fine article by Professor P. H. Hensel of the University of Western Ontario. Points out the value of real statistical control in modern business and should be read by all accountants and business executives.

Municipal Finance.

Canadian Chartered Accountant. March.

By J. A. Towner, C.A., of Quebec, and a member of our society. Mr. Towner is a recognized authority on the subject of Municipal Finance and this article further proves this assertion.

Accounting for Construction Projects.

N. A. C. A. March 1.

Deals with Cost Accounting in a business where costs are indeed most difficult to control and should prove invaluable to those especially engaged in the construction field.

LITERATURE RECEIVED

Managerial Control Through Cost Accounting for Construction Work.

N. A. C. A. March 1.

Another fine article of a similar nature and, as in the case of the article listed above, deals with problems peculiar to the construction industry.

NEW MEMBERS

Montreal Chapter.

- H. A. MacDiarmid, Hawkesbury, Ont.
- Paul Rochon, Consolidated Paper Corp., Port Alfred, P. Q.
- J. R. Archambault, Montreal, P. Q.
- G. E. Kittell, The Miner Rubber Co. Ltd., Granby, P. Q.

Toronto Chapter.

- W. J. Corrigan, Colgate-Palmolive-Peet Co. Ltd., Toronto.
- A. J. H. Leek, Chas. H. Burgess & Co., Toronto.
- Walter Smith, American Watch Case Co. Ltd., Toronto.
- C. E. McLurg, C.A., American Watch Case Co. Ltd., Toronto.

Hamilton Chapter.

- J. A. Hoover, Slingsby Manufacturing Co. Ltd., Brantford.
- W. Lloyd-Edwards, C.P.A., John Duff & Sons Ltd., Hamilton.

London Chapter.

- J. J. McLaughlin, Maxwell's Ltd., St. Mary's, Ont.
 - S. T. Rowe, Wright Lithographing Co. Ltd., London.
 - R. L. C. Keith, Kelvinator Co. of Canada Ltd., London.
 - R. L. Craig, Taylor Manufacturing Co. Ltd., London.
 - A. A. Campbell, Empire Brass Manufacturing Co. Ltd., London.
 - H. S. Coutts, London Hosiery Mills Ltd., London.
 - R. C. Henderson, Somerville Paper Boxes Ltd., London.
 - D. J. H. Ferguson, Holeproof Hosiery of Canada Ltd., London.
 - C. J. England, Silverwood Dairies Ltd., London.
 - F. Ware, Murray Shoe Co. Ltd., London.
 - H. P. Irving, Hygrade Corrugated Products Ltd., London.
 - C. H. Tomlin, H. J. Jones, Sons Ltd., London.
 - R. C. Gordon, Richards-Wilcox, Canadian Co. Ltd., London.
 - A. M. Harvey, McCormick's Ltd., London.
 - J. H. Edwards, Fine Papers (London) Ltd., London.
 - W. C. Benson, C.A., Oscar Hudson & Co., London.
- (Transferred from Kitchener Chapter.)

Niagara Peninsula Chapter.

- C. K. Souder, Hart & Cooley Mfg. Co. Ltd., Fort Erie.
- J. McLaren, Foster Wheeler Co. Ltd., St. Catharines.
- F. A. N. Haultain, Interlake Tissue Mills Ltd., Merritton.
- P. J. F. Dolan, Alliance Paper Mills Ltd., Merritton.
- A. G. Ross, Dominion Chain Co. Ltd., Niagara Falls.

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A. G. Holden, McKinnon Columbus Chain Co. Ltd., St. Catharines.
F. H. Hesler, Plymouth Cordage Co. Ltd., Welland.
C. R. Howard, International Nickel Co. of Canada, Port Colborne.
H. W. Spry, Canadian Atlas Steels Ltd., Welland.
W. E. Drexel, Thompson Products Ltd., St. Catharines.
C. Little, Burgess Battery Co. Ltd., Niagara Falls.
L. J. Haywood, C.A., Monarch Knitting Mills, Dunnville, (transferred from Hamilton Chapter).

Other new members for Niagara Chapter will be published in next issue.

SOCIETY EXAMINATIONS

Examinations in Advanced Cost Accounting will take place on Monday, April 25th, at the McGill University, Montreal, with examinations in first year Cost Accounting taking place later. First year examinations will also take place in Toronto in May and possibly also in Vancouver. Those who desire to sit for these examinations should place their application with this office immediately.

FORUM SECTION

To The Editor.

Dear Sir:

We use a standard cost system, with standards operating without change usually for one year. Most of our parts are made in our own plant but we do purchase parts, sub assemblies, etc., sometimes finished and sometimes rough with work remaining to be done in our own plant in the latter case. We have purchased several parts finished but recently these have been coming to us in a rough state with a consequent lower original cost, that is lower than the standard set, which was for a finished part. Of course the work necessary in our own plant to bring this part to a finished state, will naturally boost the cost over the present invoice price to us but the total cost will likely differ somewhat from the standards set for this finished part. What we desire to know is, how should we treat this part when it comes in to us? Should we treat the difference between invoice price and standard as a credit to Material Variance and charge the excess manufacturing cost to labour variance or would we be in order in setting up a new standard for comparative purposes only and charging the difference at the end of each month based on the number of such parts processed during that period.

Yours Truly,

COMPANY "N"

The Control of Maintenance Expenditures

An Address Delivered Before Niagara Peninsula Chapter
An address delivered before Niagara Peninsula
Chapter, Welland, March 4, 1938.

By

E. M. DETWILER

Budget Supervisor, Worthington Pump & Machinery
Corp., Buffalo, N. Y.

I find myself in somewhat the same predicament as our friend Daniel in the Lion's Den:—I am an engineer (after a fashion), was once a shop foreman, later plant engineer in charge of a maintenance division, and now being termed a "Budget Director", am about to tell a group of cost accountants that budgets are only a fractional part of the mechanism necessary for the effective "Control of Maintenance Expenditures."

Maintenance presents one of our biggest present day industrial problems. Many times the manner in which we solve it has a very important influence on the amount of profit we are able to derive from a business enterprise. In fact, I may say without fear of contradiction that any company which does not solve it correctly can not help but decay.

A slipshod maintenance program must necessarily carry throughout the productive divisions also. The resultant low productivity, high manufacturing costs, and perhaps poor quality of product will eventually be reflected in a falling off in consumer demand. This may well be the last long sweeping glide before the business suddenly plunges into the vortex of failure.

What is maintenance? Is it a fellow in dirty overalls running wild with a hammer and monkey wrench, haphazardly fixing 'em up when they break down? Well, you would be surprised! Perhaps you do not believe it but that is the general impression held by all to many cost accountants, factory executives, and even production foremen, who most certainly should know better.

Frequently, the supervisors and foremen who are striving hard to keep their departments on top of a stiff production schedule, lose sight of the indisputable fact that is absolutely essential that a definite preventive maintenance procedure be carried out with reference to their machine tools and other facilities.

A serious bit of educating is required throughout industry today for the purpose of making all key men more conscious of the relationship existing between **good maintenance and low production costs**. A **best method** of manufacturing any product can not be developed through the use of run down equipment.

Well, the purpose of this talk is to help correct wrong impressions. We can not condone these ideas on maintenance. We must perform some real spade work to educate every one in the knowledge that real savings

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in manufacturing and other costs are more readily attained by virtue of a well planned maintenance program. We are now ready for a proper definition of "Maintenance".

Maintenance as it is about to be treated means: **The art of holding real property and manufacturing facilities in a state of soundness and high efficiency.**

The Maintenance Organization:

The first step toward the achievement of our goal of economical maintenance with the correlated savings in direct manufacturing costs is of course the development of a well organized maintenance department.

Our own organization consists of two broad divisions:

1. The maintenance of buildings, real estate, heat, light and power;
2. Maintenance of mechanical equipment.

Division 1 is supervised by a superintendent who reports directly to the Plant General Superintendent, and has the following organization:

1. Foreman of Buildings and Grounds;
2. Steam Power Plant Engineers;
3. Electrical Foreman.

Division 2 (mechanical maintenance) is headed by a superintendent who reports to the General Superintendent, and has the following organization:

1. Assistant Plant Engineer in charge of new equipment proposals and equipment records;
2. Foreman of Millwrights.

Preventive Maintenance:

Each major division carries out a program of **preventive maintenance**. Trained men periodically inspect all facilities: motors, cranes, sling chains, machine tools, moulding machines, buildings, piping, and everything else which may at some time be in need of repair. Very minor defects may be corrected by the inspector at the time of his regular checking. This includes items such as cleaning and making minor adjustments on electric motors. When any repair requirement is discovered, it is immediately reported to the proper individual to insure that the necessary maintenance is performed as soon as possible, in order to alleviate the danger of running into higher costs at some future date. When renewal parts are of such a nature that they can be economically produced in our own shops, they are processed and rated by the Standards Department so that their cost may be minimized.

Wherever it is feasible, an incentive method of control may be applied for the purpose of bringing about labor savings. It is, however, open to debate as to whether this is the best policy to pursue in the case of a small plant which can not afford to build up a too elaborate system of follow-up. An organization such as the latter must rely entirely upon good supervision which after all is at a premium, and can never be replaced by any system. A system merely serves as an able assistant to the busy supervisor. It can not be expected to do more.

Records:

A complete program of preventive maintenance necessitates the keeping of adequate equipment records which show the up-to-date status or case

CONTROL OF MAINTENANCE EXPENDITURES

histories of all plant facilities. The utilization of such information is reflected in lower costs for both repairs and replacements.

Periodic inspections to forestall expensive breakdowns, together with close adherence to a schedule of preventive maintenance and replacement governed by plant equipment performance and cost records, is a hard combination on which to improve. It gets at the heart of the manufacturing organism and prevents it from developing a "leaky valve". (On the contrary, the heart is kept strong.) Machine tools are not only repaired but modernized so that the best in the way of methods improvement for low production cost may be realized. Thus, efficient maintenance may greatly aid in the set up of any successful motion improvement plan.

Manufacturing Methods Relationship:

The standards' or methods' engineer needs good tools to produce jobs efficiently. He depends on the maintenance division to provide such facilities. Poor equipment has a tendency to distort the planning and rate-setting structure. Any number of specific instances could be cited to emphasize the fact that unjustifiable deterioration of machine tools has resulted in the breaking down of a rate structure, because it prevented operators from earning premium compensation which they had previously enjoyed while their working equipment was kept in the good condition prevailing at the time methods and rates were established. It is apparent that a condition such as this one can cause tense labor difficulties if not corrected.

Maintenance Expenditure and Budgetary Control:

Now that the necessity for planned maintenance has been explained, it is time to express a few thoughts on budgeting. I know the accountants in the gang think it is about time we started talking about that.

The reason for all the palaver from the shop angle is that the average cost accountant lacks a sufficient and most comprehensive working knowledge of that phase of the problem. He is in somewhat the same position that Lord Cornwallis was at the close of the battle of Yorktown during the American Revolution, if we are to give credence to the conception of a negro trooper in the colonial ranks:—The story is that there were about 5,000 colored troops which had been blasting away at the enemy and had inflicted rather severe losses on them when the order came through to cease firing. "Cornwallis is going to surrender," they were informed. On hearing this, one dusky trooper looked up rather perkily and said, "He ain't Cornwallis no more. He's just Cob Wallis now. We'uns shelled off all of the corn."

The man responsible for establishing a maintenance budget can do so more intelligently when he has a **good conception** of the maintenance problem whether he is by training an accountant or an engineer. He won't be "shelled out" because he understands the shop problem well. In our case, the budgeted allowances for maintenance expenditures, excepting power plant, are distributed by productive departments. Each foreman or supervisor being held responsible for those incurred in his shop.

Variable dollar allowances are set up based on the operating capacity measured in productive direct labor or machine hours. As capacity in-

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creases, more money is allowed for general maintenance. When capacity falls off, the reverse is in order. Budget reports are issued weekly. They show the allowed and the actual expenses obtaining, together with a detail of any abnormal overages.

Responsible departmental supervisors are regularly contacted by the budget man personally in order to knock down wastes before they can get out of hand. A close supervisory follow-up of this nature serves not only to improve costs but also to bring about a better mutual understanding, both educational and psychological between the shop men and the group responsible for the establishing and recording of budgets.

The paper work system is a good **Genie**, assisting the man on the firing line to improve his departmental and cost responsibility by pointing out weak spots that cry for attention. Under a system of planned maintenance it is well to consider making certain repairs during periods of slack times, when it is possible to do things without interrupting or being interrupted by production, and thereby get the house in order for the time when work volume increases.

The Case of the Foolish Virgin Company:

At this point it is well to explain the case of the **Foolish Virgin Company**. This outfit was very busy running at top speed day and night for about two years. All the boys felt they were doing a swell job and making a good profit. Unfortunately, there came a time when a depression came upon them. You might prefer the term "recession" if you were a politician, but whatever you call it, it is the same old chameleon bobbing up wearing a slouch hat instead of a cap.

Hypothetically placing myself in the position of the Foolish Virgins' maintenance engineer, I would unfold a tale in this fashion:—"There are many things we should do to put our equipment in shape to handle a rush of work when business picks up. Some of our machines are almost ready to fall apart and should be replaced. Others need some doctoring right now or they too will be very sick at some future time. The boss says we may not spend money on major maintenance items. What do we do?" That's the hell of it, what can we do? You fellows, sitting over here, say "Nothing", and you are 100% correct. Instead of doing something to prepare for the time when our plant will be booming again, we lop off a few heads and sit back dolefully groaning, "Gosh, things are tough! Wish we would get a big order." Much to our surprise, our wish comes true a few months later. What do we do then? That's the hell of it, what can we do? Why we can swing into a stiff production schedule with our machines in a questionable condition, work like the devil and turn out jobs of doubtful quality at an excessive cost because we took no advantage of the slack period to build up our facilities. While all this bedlam is raging, we shake our heads sadly (at least, the boss shakes his) and groan, "Gosh, it's tough to get anywhere with these damn rattle-trap machines."

Gentlemen, that is NOT control! It's the real "horse and buggy" model 10 B. C. as far as progressive firms are concerned, but 1938 A. D. for a lot of others. I'll take a V-8 instead of a buggy.

SOME DIFFICULTIES OF EXPORT TRADE

Conclusion:

Summarizing, the control of maintenance expenditures necessitates:—

1. A broad managerial policy which provides for a definite program of preventive maintenance by a well organized maintenance department;
2. A close correlation of the efforts of the maintenance and methods divisions, for the purpose of getting the most out of motion and time improvement;
3. An effective budgetary control procedure which embodies a good method of follow-up for improvement as well as one for the establishment of performance standards which consider the need of rehabilitation during slack periods.

Some Difficulties in Export Trade

Are there difficulties in the path of export trade to-day? If so, are they more numerous than those that existed before the world war?

The answer to both questions is an emphatic "YES", and these difficulties that have all but strangled export business to-day were outlined by Mr. Walter Lattman, Assistant to the General Manager of Massey-Harris Co., Limited, who addressed the February meeting of the Canadian Society of Cost Accountants and Industrial Engineers, held at the Canadian Military Institute on Tuesday, February 22.

Mr. Lattman, with a background of 18 years' experience in the Export business, gave a most interesting and informative address. He has visited and worked in practically every country in the world, incidentally becoming proficient in some seven languages. Those who were fortunate enough to hear him could have listened all night, while the members of the Society who were unable to attend the meeting certainly missed a real treat.

After touching lightly on national exporting, which was simply a matter of exchange or barter, the speaker delved into private or individual exporting and, while he dealt with the subject in a more or less general way, he brought out many facts that were both startling and highly interesting.

Quotas, exchange regulations, tariffs, the different legislation in effect in different lands, the strange buying habits of various countries, not to mention such conditions as climate, local laws, and the many changes that have become effective since war days, were a few of the difficulties facing would-be exporters these days, the speaker said. A note of humour was introduced when Mr. Lattman told of one exporter who became very indignant because his efforts to sell raincoats in Peru fell flat. The exporter was sure that he was being discriminated against when, as a matter of fact, the reason his goods were not selling was that it had not rained in Peru for some 18 years.

Manufacturers of automobiles, said the speaker, faced the necessity of rearranging the set-up of their products when entering foreign markets.

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SITUATIONS VACANT

Wanted, an experienced Time Study man, with preference to one with knowledge of cost accounting in the textile industry. The position is paid for at a very reasonable salary and there is every prospect of promotion for the successful applicant, who should be about thirty years of age and able to speak both French and English. Box 19, "Cost and Management."

Cost Accountant, good opening in manufacturing plant in Montreal for man with machine shop and foundry experience, who understands shop systems and their application, and who is fully grounded in cost accountancy. Give full particulars including age, salary desired, present employment, experience and references. Please do not apply unless you can meet conditions. All applications strictly confidential. Apply Box 25, "Cost and Management."

SITUATIONS WANTED

Industrial Accountant, with many years' experience as Accountant. Cost Accountant, Factory Manager and Business Manager, seeks position where he can use such training and experience to advantage. Apply, Box 17, "Cost and Management."

Young man with Collegiate Institute, Normal School and University education, and with experience in teaching, general and public accounting, in addition to cost accounting, is at present disengaged and seeks permanent position with sound organization. Apply, Box 18, "Cost and Management."

General accountant, with several years' experience in Public Accounting and Auditing work, with some experience in Costs, preparing for a C. P. A. degree, desires position with opportunity for advancement in Commercial or Manufacturing concern, preferably, but not essentially, in the vicinity of Hamilton. Apply, Box 20, "Cost and Management."

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In some countries, for example, where traffic moves on the opposite side of the road to that which is used in Canada, the steering apparatus must be built on the right-hand side of the car, rather than on the left. In other countries, electric automobile horns are not permitted, which means that manufacturers are faced with the necessity of supplying older types of warning devices.

Manufacturers of soap, as another example, found that in some countries the grocer handled that product; in others it was the barber; and in still others it was the specialty store. Buying habits also were vastly varied, some purchasers buying only one cake when required; others in quantities of a dozen at a time. Some would purchase only wrapped soap, others wanted it unwrapped, and so on. All of these habits had to be studied by the exporter who would be successful in the foreign markets.

Regarding tariffs, Mr. Lattman said that Governments did not always receive the full co-operation of business, which simply made for more complications in a system that was already much too involved.

Speaking of tariffs, Mr. Lattman pointed out that there was a law in Cuba which gave preferential tariff to all countries that purchased at least 50% as much from Cuba as they sold to her. Statistics, as prepared by Cuba, showed that Canada was not entitled to this preferential tariff, whereas Canadian figures showed an entirely different picture. The reason for the difference was that the bulk of Canadian imports from Cuba, consisting of fruits, sugar, tobacco, etc., came through New York, and were tabled in Cuba as exports to U. S. A. This was only one of the difficulties that Canadian Trade Commissioners were continually trying to iron out.

EMPLOYERS



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SOME DIFFICULTIES OF EXPORT TRADE

Mr. Lattman blamed lack of development of foreign markets for keeping Canada's export business below the point where it should stand. "For example, Canada sells much less to Turkey than she buys," he said, pointing out that this condition could be improved with some development work in that country.

Regarding the matter of exchange regulations, Mr. Lattman said that, before the war, foreign trade was more or less balanced, and that it was handled along clearing house lines; but since the war, many serious changes had taken place, which reduced foreign trade to a strictly barter basis.

Italy, for example, was a large buyer of Canadian goods in pre-war days and, in turn, Canadians purchased large quantities of Italian cheese, wine and other products, mostly luxuries; but since the war, buyers found that they were unable to afford such luxuries from Italy, and there were fewer tourists able to visit Italy. That country, however, having little raw materials of its own, was forced to purchase them in the world markets. Consequently, Italy soon came to the point of having to spend huge sums, while receiving less and less in return. The inevitable result followed: gold started to leave the country and, as a necessary safeguard, insurmountable exchange restrictions were put into effect by Rome.

Similar conditions existed in many other countries, including Germany and many of the South American lands, Mr. Lattman continued. In many cases, direct trade was impossible, exporters being forced to deal through compensation offices. Often the seller was forced to wait weeks, and sometimes months, for payment.

In so far as selling goods to Germany was concerned, the speaker said, the seller received no money, but must accept German goods as payment. This necessitated the finding of a market for the German goods accepted, which in turn created unfair competition for manufacturers of the products accepted as payment from the German buyer.

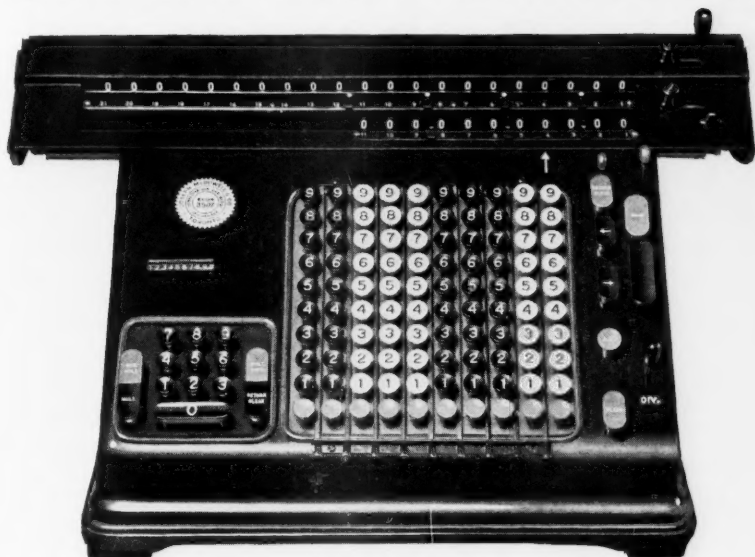
The necessity of supplying no less than seven invoices, plus consular invoices, plus a certificate of origin, plus a license, plus proof of payment of taxes and, just as an added insult, proof of the cost of the manufactured article, when attempting to do business with firms in Brazil and, as a matter of fact, with many of the South American countries, made such dealings anything but attractive. And even if an exporter was brave enough to go through all this "red tape", he might, in the end, have to whistle for his money.

Mr. Lattman gave many other first hand experiences of the "difficulties of Export Trade," keeping his audience's interest right to the end.

In the discussion that followed, Mr. Lattman was able to clarify many of the listeners' particular problems.

In moving a vote of thanks, Mr. C. D. Landell emphasized the fact that through Mr. Lattman's varied experience, we had been privileged to learn in a short space of time, what could otherwise be acquired only through many months of intensive reading. The motion was seconded by hearty rounds of applause.

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The Account in his Relation to Factory Management

An Address Given Before the Hamilton Chapter

By

R. C. STARK

Pratt & Lambert Inc.,

Buffalo, N. Y.

Broadly speaking, the job of accounting for factory costs might be divided into two parts, one, the determination of costs for the purpose of establishing selling prices and, two, the development of cost data for use in factory management. It is with the second, and to my mind, by far the most important part of the job, that I will confine my remarks this evening.

The development of cost data for use in factory management might be further broken down into two main divisions; first, accounting for all materials and labour used and all other expenses incurred in the manufacture of the product; second, providing a comprehensive system of checks on all manufacturing operations with regular reports at minimum time intervals, which clearly indicate variations from standard or predetermined costs.

Now, having established the nature of the work in a general way, let me give you my idea of the essential qualities the accountant should possess if he is to satisfactorily perform the duties expected of him. He should be accurate, thorough, tactful and possess good judgment. He must have an inquisitive mind, coupled with plenty of initiative and a well developed sense of observation. He should be well trained in modern accounting procedure and at the same time be adaptable to at least the extent that he is able and willing to adjust his methods to the essential characteristics of the particular production problems in the industry he is connected with. Such a man would never lack profitable opportunities to make use of his talents. Too often we find an accountant who may qualify satisfactorily from the standpoint of accounting ability but who fails to realize his opportunities to the fullest extent because of this lack of adaptability. The goal of such an individual is apt to be the presentation of elaborately detailed cost statements and reports without regard to their value to the manufacturing department as a means of cost control or reduction. In a recent address, Charles R. Stevenson, of Stevenson, Jordan and Harrison, said that the successful business revolves itself into "The fundamental principle, that buying power depends upon efficiency of production. Our efforts should be directed toward the problem of cost reduction through maximum labour efficiency, improvement of machinery and methods of production, elimination of waste of all kinds, and reduction of distributing costs. This constitutes the major problem facing industry to-day."

Lamont Du Pont, President of E. I. Du Pont de Nemours & Co., addressing the Franklin Institute, Philadelphia, on October 13, said, "Cost

RELATION of the ACCOUNTANT to FACTORY MANAGEMENT

is the common denominator of our economic system. It determines alike the degree of our prosperity and of our distribution of wealth". He further stated, "Place goods within the means of more people to buy and at once you distribute wealth, add value to your money. Rising wage scales mean nothing if prices rise with them but maintain fair wages and reduce prices and you actually raise wages". The statements of these eminent men indicate clearly their convictions with which I am sure we all agree. With taxes and material costs increasing as they have by leaps and bounds, is it not now more essential than ever that manufacturers hoping to continue to operate at a profit, go over every last item of manufacturing expense with a fine tooth comb so that product costs may be maintained at the lowest possible figure.

We are faced with a situation to-day where in spite of substantially increased costs of doing business, it seems impossible to increase selling prices, so that we can continue to sell our merchandise at a profit. Material costs may be reduced in some instances but not to the point where such changes effect the quality of the product, for our people are discriminating buyers and are quick to sense inferior merchandise. To operate a manufacturing establishment successfully it is necessary that we have a market for the goods we produce, therefore, every possible effort must be made to substantially reduce manufacturing costs without effecting the quality of the product and here is the real opportunity for the cost accountant who is alive to the situation. We must look for profits, not in the selling price but in the cost of production.

It is not my intention to present any particular system or method of accounting procedure. I am not an expert accountant in any sense of the word. I have been told that an expert is a person who gets paid whether his advice is good or bad. As far as I know I am not being paid for this address, so that automatically let's me out.

As I have previously said, the exact system or method of accounting to be used must be determined by the character of the business. A system which is satisfactory for a paint plant will not work in a machine shop or vice versa. It must be comprehensive, yet simple. Too many cost systems are wrecked upon the reef of practicability because they are too unwieldy. We must record only useful information. In this connection I have no doubt that if any one of you will go back to your office in the morning and check over your cost system you will find a great many operations being performed and records being kept which are of absolutely no use whatever as far as their value is concerned in the economical conduct of the business. Why not try it to-morrow? We take inventories of stocks on hand once or more each year, why not make an annual check up and analysis of your cost system so as to prevent the gradual addition of non-essentials and make simplifications which may be possible due to changing conditions?

In any cost system there are certain essentials. Raw material costs must be accurate with proper allowance for purchasing, incoming freight, receiving, testing, storing, handling and shrinkage. Accounts should be kept accurately, both as to quantities and values with frequent checks

COST AND MANAGEMENT

against physical inventories. Proper requirement figures must be set up so as to effect economies in purchasing and inventory turnover. Finally a raw material profit or loss account is necessary in order to provide a definite performance record, separate and distinct from other operating cost accounts.

Suitable standard costs must be developed by time study or experience for the purpose of providing a continuous check on labour efficiency in productive operations as well as a control of indirect or non-productive labour.

A simple form should be devised which will provide departmental supervisors with essential information for economy of operation both as to labour and controllable items of expense. If piece rate or incentive wage payment plans seem desirable such programme should be recommended and developed by the cost accountant. In this phase of his work it behooves the accountant to move warily and tactfully. There are a great many angles to be considered in human relationships as they affect the factory working staff. An increase in production per man with a consequent reduction in cost is much to be desired, but before any such step is taken the situation should be carefully considered from the standpoint of its ultimate results. When you are not sure of the road, it is best to drive carefully, otherwise you may break a spring or ruin the car. Operating cost records should also provide for detailed information regarding overhead or burden costs at regular intervals. Such costs should be allocated directly to productive departments or centres where this is possible. All reports must be comparative and cumulative when such information is of value in supervising or planning operations. May I summarize briefly what, to my mind, are some of the more important ways in which the Cost Accountant can be of service to the Plant Manager.

1. Provide a complete comprehensive check of raw materials with particular emphasis on economics in
 - (a) Purchasing,
 - (b) Handling,
 - (c) Shrinkage.
2. Provide data on manufacturing costs with relation to methods of manufacture, type of equipment used, excess costs of small orders, reduction of loss or shrinkage in manufacture, etc.
3. Provide regular departmental cost analysis reports on labour and expense items for use of supervisors.
4. Provide a complete up-to-date record of all plant machinery and equipment.
5. Provide regular comparative and cumulative monthly expense analysis reports in sufficient detail for use in supervision and planning by factory manager.
6. Provide monthly operating profit or loss report by departments and for factory as a whole.

Of course in listing these six items, I have only attempted to hit the high spots. There are numberless details peculiar to your own business which you may fill in at your leisure.

RELATION of the ACCOUNTANT to FACTORY MANAGEMENT

In looking back over this talk, I realize that I have outlined a real job of work. Perhaps you may wonder what the factory manager would do with his time if his cost accountant covered all the territory I have mentioned. It is still true that great works are performed not by strength but by perseverance. No person is honoured for what he receives. B. C. Forbes in his recent book "Men Who Are Making America" says, "My study of the careers of these men has impressed me with this fact, most of them had to pay for the price of success. They worked harder and longer, they studied and planned more assiduously, they practiced more self denial and overcame more difficulties than those of us who have not risen so far." May I close with a quotation from the Book of Books, which is just as true to-day as when it was spoken nearly two thousand years ago, "Be not weary in well doing for in due season ye shall reap if ye faint not".

The Earned Hours Wage System

By

J. J. MCGILL

The Steel Co. of Canada Ltd.

Address to Montreal Chapter, Canadian Society of Cost Accountants
and Industrial Engineers, Students' Night, February 25, 1938

It is the popular belief that the most effective results in any industry are obtained by taking into consideration the interests and welfare of the workers. Machinery has, in many instances, reduced labour to routine tasks; however, the fact remains that maximum production is only possible where conditions are agreeable and pleasant to the worker. Most industries to-day are taking far better care of their employees than ever before. Pension and Benefit Plans are being introduced everywhere. There is a definite tendency to reduce the age limit for pension eligibility. In many cases, considerable time and money has been spent on recreational facilities which employees are encouraged to use in their leisure hours. All these things make for better feeling between the employee and employer, and I have yet to hear of any proprietor having cause to regret any movement on his part towards bettering the condition of his workers. In this regard the most important consideration is the wage payment system, and it is with this that I am to deal to-night. It is impossible for me, in the short time at my disposal, to cover all phases of this subject. I shall try to outline briefly one or two of the wage payment plans in vogue to-day.

THE DAY RATE SYSTEM

The oldest known method of paying wages is the Day Rate. In the early days of industry, when there was very little machine labour, the system was quite adequate. In those days each labourer performed, as a rule, much the same kind of work for days at a time; consequently, variation in rates was unnecessary.

The first modification of the day rate came soon after it was discovered that some labourers could turn out more and better work than others—as a result, there became a variation in the amount of daily pay for

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different types of work, and the distinction between skilled and common labour was recognized. Later, the practice of paying by the hour instead of the day was introduced. This change was probably due to the shifting of labour from one job for which a certain rate was paid to another where the rate was different.

Under present conditions, a strictly day or hour rate is, in most cases, unsatisfactory, and offers little or no incentive to labour. An efficient worker receives no more pay than does the mediocre or incompetent worker; also, the day or hour rate offers little direct aid in cost finding, for production per hour may vary. Then, too, it gives no clue as to the quality of output and no reliable product cost can be obtained. The system is practical, however, for paying certain classes of indirect labour, and where definite results can not be measured on an hourly basis.

Inasmuch as the evolution of wage systems parallels the development of industry, the idea of incentives in order to stimulate production was adopted.

Many pay systems are so complicated that the men do not know what they will get until the pay cheque is received. This is particularly true in the system where a man is paid only a percentage of the time saved on a job, as the unit price then varies with the actual time consumed. Furthermore, the system is not especially conducive to good feeling, for labour's natural attitude towards such systems is one of deep suspicion, which is intensified when men are confronted with something they cannot hope to understand, but it must have its good points, or it would not be so widely used as it is to-day.

The simplest and, I believe, the best pay system is to have a fixed price per unit, preferably in time: that is, so many pieces per hour. Prices given in time do not have to be changed when there is a general revision of rates, due to business conditions, and the men can be made to see that this is an added protection against price cutting—a thing which should be avoided if at all possible. Under this system a man can tell exactly what he earns, without having to resort to a lot of scientific research,—and this helps materially in allaying the suspicions of labour and increasing its confidence in its employers.

The system is based on the productive ability of a man whose average output is so many units per hour. This average is set up as 100% productive ability, and if he exceeds or falls below the standard he is paid accordingly. For example:

After time studying an operation it is decided that 100 units per hour is a fair average output, and this average is set up as 100% productive ability. A worker's rate is set at 60c per hour. If he produces 125 units then his productive ability jumps to 125%, and he is paid his 60c plus the extra 25% earned, making a total of 75c; or, taken another way, if in an eight-hour day his average output is 125 units, then he has produced, in eight hours, what ordinarily would have taken ten. He is paid \$1.20 for the two earned hours, or 15c an hour over and above his regular rate.

This system provides a very efficient and accurate yardstick to measure the ability of the employee. For example: 100% means normal; 110% would be considered a good producer, inasmuch as he has produced 10%

EARNED HOURS WAGE SYSTEM

more than the normal rate established. Conversely, 90% would indicate that the worker is 10% below normal, and so on.

You will see by this that a report can be made to the management, showing the productive ability ratings of each and every employee. As a result, inefficient workers can be spotted and weeded out. In the case of lay-offs, the productive ability report is also very useful, because, through it, the workers are judged on merit. The workers with the lowest ratings will be the first to go and the last to come back. This prevents favoritism from creeping in on the part of superintendents and foremen.

The vitally important factor in the administration of a piece work system is the setting of rates. It is imperative that we avoid uneven rates. One of the chief difficulties in setting up a fair and accurate system is the fact that in many, many cases the management is so far removed from the actual details of production that it cannot see the need for the amount of preliminary study that must be exerted before any plan can be made effective; consequently, standards are frequently set which have no logical basis.

Before a rate is set and the productive ability of a man established, it is essential that a complete job analysis be made. It is inadvisable to set rates on the estimates of foremen or other supervisors—however experienced they may be. It has been found that such rates vary considerably—depending on the mental attitude of the estimator.

In order to evaluate a job, it is necessary to consider the length of time required to do it in and how rapidly and effectively the operator worked. In order to obtain this information, time studies must be made, and the job completely analyzed. Experienced time study men are sent into the plant with stop watches and charts. Every detail of an operation is timed and noted, and the operation, or cycle of operations, is watched over and over again, each one being timed separately.

The next step is to ascertain the maximum productive ability of the machine running full time with no stops for re-charging, or delays. Having once procured this figure, and put it on a time basis, the time study chart is examined. The average time is taken for each individual movement in the operation, and necessary allowances are made. It would be easier to understand if I gave you an example:

Let us suppose that a machine running full time can produce 100 units per hour. The time study shows us that four times in the hour the operator of that machine had to stop in order to re-charge it with new material. Each stop lost him two minutes. Thus, in an hour, eight minutes are used in re-charging. This eight minutes is added to the sixty minutes taken by the machine to produce 100 units. Hence, the productive ability is set at 100 units per 68 minutes. Likewise, allowances are made for delays, beyond the man's control. If the job is a strenuous one, a certain percentage is allowed for fatigue; there is an allowance made for personal attention (permitting a man to powder his nose once or twice a day, without having to suffer in consequence); last, but not least, there is the allowance made for incentive.

I cannot stress too heavily the importance of setting accurate rates and, in this respect, the time study man must watch his P's and Q's. The

COST AND MANAGEMENT

worker under observation is very much aware of the fact that he is being studied and, in some cases, his reactions make it very difficult to get an accurate study. Some men will deliberately slow down, hoping for a loose rate; others do not mind at all, and continue to produce as they always have. On the other hand, there are men who will work their heads off to give you a good study. Allowances must be made—for too loose a rate is very costly, and leads to price cutting, while too stiff a rate reduces the value of the incentive materially.

There can be no doubt as to the value of a system such as I have outlined to you. The chief end of proprietors to-day is to reduce costs and increase accuracy. This system accomplishes both these objects. It stands to reason that lower, more consistent, and more accurate costs can be obtained when labour is paid for exactly what it produces,—than when a fixed rate is paid regardless of this result. Increased production means decreased overhead and certainly the incentive increases production.

Only the other day I saw where a man's average output on day work was 480 pounds per hour. When put on piece work he increased his average production to something over 800 pounds per hour—an increase of 60%. I can cite cases where men's productive ability has increased anywhere from 30 to 50%. Where was this 50% before? It wasn't. It was waste loss and burden.

The man who devotes his attention to the reduction of costs and the elimination of waste will usually show a larger profit at the end of a year than will the man who disregards his costs and concentrates on increasing his sales.

Cost Accounting by the Machine Method

By

G. W. KEMP, R.C.A.,
Victor Co., Ltd.

An Address to Montreal Chapter, Students' Night, Feb. 25

In most industries time factor has developed into a very important feature in accumulating information for determining the cost of an article. To meet this situation economically, machines of all description have been developed and can be employed to assist in the work of the Cost Department. Time factor has so strongly rooted itself in accounting that you need only to look around to see the numerous machines available for assembling figures. A very attractive feature is that these machines are dead accurate, provided they are operated properly, and that the correct figures are placed in or applied to the machine. With such machines available, it is no wonder that numerous large industries have adopted the machine method of costing their manufactured articles, as well as being applied to their general accounting.

COST ACCOUNTING BY THE MACHINE METHOD

To illustrate the machine method, I shall endeavour to outline the procedure in use by a concern of this city. This procedure may or may not fit into the Cost Accounting of most businesses, but I feel the fundamentals will be the same and, therefore, believe could be applied, with a few alterations, to suit the requirements of most manufacturing concerns.

The first form entering into the machine method of Cost Accounting is the Receiving Slip, covering all material entering the Factory. The information on the Receiving Slip is very important and, consequently, demands any advantages that can be applied. In many instances, the Receiving Department is very active, especially just prior to heavy production, and since it is essential that each lot of articles received be properly recorded immediately upon receipt, speed and simplicity in recording the receipt is an advantage. To accomplish this a mechanized writing apparatus is used. Continuous duplicate Receiving Slip forms with permanent carbons are fed into the apparatus. Having filled in the information, a mere twist of a handle releases the completed receiving slip in duplicate. It is obvious much time is saved in this one detail. With the proper writing facilities available by the use of the apparatus, you are always assured of good carbon copies—very necessary for checking purposes.

In checking the quantity of small articles received, such as screws, washers, eyelets, etc., when shipped in bulk and possibly amounting to many thousands of units, a computing count weighing scale is employed to ascertain the actual quantity received. This scale actually counts the mass of articles by a weighing process. A shortage, if any, is detected immediately and indicated on the receiving slip, which is either deducted from the vendor's invoice or arrangements made to obtain the balance to complete the order.

Copies of all Receiving Slips are sent to the Cost Department, where they are checked with the Purchase order covering the respective material as to quantity ordered and received. For our discussion tonight, it is assumed that the quality of the material meets specifications. Upon receipt of the vendor's invoice, the price of the raw material is checked with the specified price on the Purchase Order. Assuming the price and quantity agrees, it is necessary to check the extension. To check the extensions on numerous invoices by hand is a long, tedious job, for, in many instances, one invoice will contain many articles or types of an article. Also, oftentimes, a gross or selling unit price is quoted on the invoice subject to several separate discounts. These deductions must be calculated separately to arrive at a net price per unit. For the purpose of accuracy and speed an Electric Calculator is used to check all calculations and extensions on each invoice. This particular machine is very helpful as it fulfils the desires of the Management in handling the vendor's invoice with absolute accuracy, speed and economy. The time saved in completely checking the vendor's invoice in a comparatively short time is of some assistance in taking advantage of cash discount within ten days. To establish the landed cost, transportation and duty are added to the cost of each type of material on every invoice. These added costs must be charged to each type of material proportionately. Here again the Calculator is used and much time is saved.

COST AND MANAGEMENT

Now, the invoices are ready to be posted in the Stock Ledger as "raw material receipts."

In manufacturing concerns, where many types of raw material are handled to make up the finished product, the duty of operating perpetual inventories entails a great deal of work, when done by hand. To handle the perpetual inventories efficiently and economically, a machine has been put to the task of operating a Stores Ledger. This is a specially designed electric machine, known as a "Typewrite Stores Record Machine." This machine posts from the vendor's invoice to the Stores Ledger all receipts of raw materials, recording the quantity received and the total dollar value of the quantity of each individual type of material on a separate ledger sheet. The postings are proved by the use of a proof sheet, which is in the machine continuously during the process of posting. All postings to the ledger sheet are printed on the proof sheet as well, that is, quantity and dollar value. These proof figures accumulate in the machine and when the postings are completed quantity and dollar value totals are delivered. If the postings are correct, the accumulated totals should agree with the addition of all invoices, both as to quantity and dollar value. At this point, a unit value of each type of material is ascertained by dividing the dollar value of the receipt by the quantity received, on the Electric Calculator. This unit price is placed at the top of the ledger sheet and is used when handling the material requisitions. If several receipts are recorded, varying in price, an average unit price is used when extending requisitions.

It might be as well to mention at this point that all raw materials or groups of raw materials bear a sub-account number, as well as being controlled by a major account number, as set up in the code of accounts. This, as you can understand, simplifies indexing the materials in the Stores Ledger.

On commencing to manufacture an article the Production Department issues a Bill of Material covering the quantity and description of every type of material required to produce a specified number of the article. For accounting and reference purposes, each distinct job is given a Shop Order Number. From the Bill of Material a requisition is issued for each type of raw material. In a manufacturing concern where there are thousands of individual parts making up the finished product, for instance the automobile, radio and all sorts of automatic machines, it is often the case where a thousand or more requisitions are issued to the Stores Department covering the manufacture of one type of finished article. Therefore, it would be advantageous to find some method of speeding up the issuance of these numerous requisitions accurately and legibly. This has been accomplished by having the requisitions made up in continuous fan-fold duplicate forms with a permanent carbon arrangement. To be positive that the original and duplicate copies are always in line with one another, a continuous line of holes have been punched on either edge of the form, into which fits small prongs affixed to a special roller applied to an ordinary typewriter. When these continuous forms are fed into the typewriter this small feature on the typewriter roller eliminates any possibility of the typing on the carbon copy appearing in an incorrect position

COST ACCOUNTING BY THE MACHINE METHOD

on the duplicate. These requisitions are numbered consecutively for checking purposes and each Shop Order consists of consecutive requisitions. The original copy is sent to the Stores Department and the duplicate to the Cost Department.

Assuming that the material covered by each requisition has been delivered to the proper Producing Department, the original is returned to the Cost Department. There is always the possibility of a requisition being mislaid prior to arriving at the Cost Department and, to prevent this, a number check system is used, whereby each requisition number is checked off on a pre-arranged list of consecutive numbers, a group of which applies to the requisition numbers covering the Shop Order in question. Any numbers not checked off would indicate that that particular requisition number has not arrived at the Cost Department and consequently is subject to investigation, with the aid of the duplicate copy. This systematic check assures that all material requisitioned is included in the Cost.

From here the requisitions are turned over to the "Typewriter Stores Record Machine" referred to previously, to be posted as disbursements in the Stores Ledger. This is a very important step for a tremendous amount of time is saved. The machine insures accuracy and legibility because it calculates and proves each transaction, prints all results and typewrites all description and reference information. The main feature is that it posts the ledger sheet and extends the requisition in one operation. It is obvious that the machine saves considerable time and reduces clerical expense, as duplicate work is eliminated. The machine posts the new quantity balance and multiplies it by the price to obtain the new value balance. In the same operation the requisition is extended and all calculations, prices and postings are proved. Since the requisitions have been extended it is a simple matter to run off a total of the value of all requisitions. Such total represents the cost of all direct material applying to that shop order covering the article to be manufactured.

It has been found much more efficient and convenient to have all accounts coded by number whether the accounting is done by machines or by hand. However, the value of coding the accounts by number is enhanced when using machines, particularly when using what is called the "Hollerith Tabulating Machine." You are all no doubt familiar with the principles of setting up an account code system.

Dealing with the question of labor this particular phase of Cost Accounting can now be handled in a very efficient and speedy manner by employing the Hollerith Tabulating Machine. Those of you who are familiar with the operation of this machine will unquestionably appreciate the many advantages that can be had in its use. For those of you who are not familiar with the machine, I shall mention its direct purpose is that of sorting and summarizing figures. To arrive at a total direct labor figure you must summarize the labor of the numerous employees working on that particular article in the various producing departments. This information is obtained from the time or production sheets of each employee, indicated by a man number. The labor on the time or production sheets is coded according to the producing department where the work

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was performed. In short, the time and production sheets contain the following information:—

Hours or quantity of articles handled,
Shop order number,
Man number,
Group number,
Major and sub-account numbers,
Total amount earned.

Dealing with direct labor only, time and production sheets are received by the Payroll Department. The time sheet representing "hourly labor" and the production sheet representing "piece work." Each sheet is extended, indicating the total dollar value of the labor spent by one employee, as well as the other information mentioned above. The time sheets are then turned over to the Hollerith Machine. In order that these figures may be assembled by the Hollerith, it is necessary to transpose the information on the Time and Production sheets to a specially designed card, approximately 3" x 6". This card is printed in such a way that minute numbers from 0 to 9 appear vertically and repeated horizontally throughout the length of the card. Consequently, you have a mass of uniformly spaced numbers, segregated by divisions as to date, shop order number, man number, account number, amount, etc. The figures from the Time and Production sheets are transposed to this Hollerith card by means of punching out numbers on the card corresponding to the digits making up the figures as set out in the Time and Production sheets. These cards are then sorted by the Automatic Sorting Machine, first as to direct labor dollar value and then re-sorted to summarize the cards according to the various producing departments. Incidentally, you may obtain a summary of any one set of figures on the cards, such as total labor hours, piece work, shop orders, man number, etc. Once sorted by direct labor dollar value and producing departments, they are run through the Tabulating Machine and the full information on each card is printed in a continuous line on a form appropriately ruled and headed. One card follows the other, and when all the cards have passed through the Tabulating Machine you have a total of all direct labor spent sub-totalled according to producing department. The same cards can be utilized after re-sorting in the preparation of the payroll and determining the earnings of each employee for income tax purposes.

With regard to "manufacturing expense applied," this is usually a figure based on direct labor expense, or direct labor hours, as the case may be. Therefore, there is no machine operation prior to charging MANUFACTURING EXPENSE APPLIED to the WORK IN PROCESS ACCOUNT. However, the actual manufacturing expense, such as indirect labor, indirect material, service charges, maintenance, etc., is handled by the Hollerith Machine. The indirect labor is handled similar to the direct labor. Other manufacturing expense is handled through the voucher register, which is entirely operated by the Hollerith Machine.

PRODUCTION COST FROM THE CONTROL POST

Since the voucher register handles all raw material purchases, which are coded as to sub-number, the Hollerith Machine is in a position to summarize the various types of raw material. From these figures a total of all raw material purchased during a period is delivered and posted as a debit to the raw material account in the operating ledger. When debiting the WORK IN PROCESS ACCOUNT by journal with the direct material requisitions, you, of course, credit the raw material account in the operating ledger. The balance of this account in the operating ledger ties up with the control balance in the Stores Ledger, operated by the "Typewriter Stores Record Machine," provided all postings to the Stores Ledger have been correctly made.

From the Typewriter Stores Record Machine you have received all material requisitions accurately extended and by simply totalling the requisitions, you have a total material charge. You have received a total direct labor figure from the Hollerith Tabulating Machine. The manufacturing expense applied is calculated, based on your total direct labor figure. In all, you have the necessary figures to charge the WORK IN PROCESS ACCOUNT,—expressing the total dollar value of each Element of Cost—the grand total of which represents the cost of the total production of articles being manufactured. When the production is completed the WORK IN PROCESS ACCOUNT is credited at Standard costs and the same amount debited to FINISHED GOODS. The difference between actual and standard costs in the WORK IN PROCESS ACCOUNT is charged to a Variance Account.

I hope I have succeeded in my effort to explain a few of the many advantages which are available by employing appropriate machines in calculating costs—chiefly, these advantages are economy, accuracy, speed and efficiency.

Production Cost from the Control Post

By

G. E. ROCHFORD

Canadian Marconi Co., Ltd.

An Address Before Montreal Chapter, Students' Night, Feb. 25

This system is to serve an industrial plant which manufactures custom work and medium quantity productions, ever changing in design and detail, with a multiplicity of operations both on primary and assembled parts.

The basis of operation is to establish a responsibility proportionate to the rank and remuneration of the worker. The key employee is the department foreman, and a bonus may be paid him under the plan. It

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allows for no controversy, except between the department heads, superintendent and estimator. It establishes a day rate and requires of labor nothing more than conforming to instructions given.

It places a premium on—intelligent estimating—modern productive methods—and ingenious supervision with a group small enough to make the increase in remuneration possible for good operation. It increases interest in the sciences and establishes keener cost accounting at the control post. It is important to management, with a daily record of operations. There is a co-ordination with past performance and a yardstick for the future.

By its compactness and simplicity it needs no red tape to bind it; employs only key men and responds sharply to executive direction.

A card record is used in units of 3,000 cards, mounted on a revolving drum at table level, convenient for entries without removing a card.

A prime cost estimate is established on the key or job card. Each card records a print indicating the estimate, code shop number, requisition number, purchase order number, quantity, and columns for labor and material entries.

The purchase order records the contract price and this provides an interim check on material cost before the job is much under way.

A copy of the Purchase Order is sent to the Receiving Clerk, and this copy indicates the department using the material.

The receiving slip, made by the receiving clerk, is signed by the productive department, and acts as a requisition on stores. This slip is then entered on the cost cards, obviating any further cost record.

In some instances where material is of known late delivery, an estimated cost of the material may be entered on cards to build up fast, and when invoices are received and definite prices established, adjustments may be made, if necessary.

The Timekeeper's daily labor balance sheet is a statement in numerical code sequence, speedily transferred to the control cards. The methods of this transfer is carefully set out and automatically establishes an audit balance for the entries without re-check.

A complete record of both labor and material form the daily management advice of cost vs. estimate and card signals mark the individual costs for investigation.

The blue prints are issued to the Factory bearing the code number, description, quantity and estimate.

For custom work or minor quantities, the artisan is the subject of study by the foreman; for the production work the process set-up. The foreman is the responsible individual, however, in each case, his direction

PRODUCTION COST FROM THE CONTROL POST

bringing about the cost result. Reference is made to the Superintendent or Estimator for advice and possible adjustment.

The psychology is, that the foreman and Superintendent be cost conscious. They are freed of paper work and material movement, which are placed under the direction of a productive foreman, and this work is effected at competitive speed with the ingenuity of intelligent set-up, rather than the lash of a restless, variable system, rendered futile to all by continued readjustment, and the eternal subject of debate by the workers.

The answers are in compact form and the system allows of rapid rearrangement for necessary changes in structure, estimating, shop procedure, and affords a running, accurate guide to the Control Clerk and Estimator of the progress of all work in the plant, with all references at this central point, making an easily read barometer of factory conditions.

The completed cards are filed in such a manner as to be easily referred to by any branch of staff.

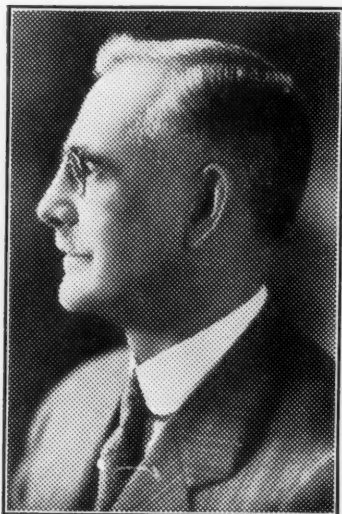
Marginal notations may be made in a column indicating while alive in the minds of those concerned, items of interest for future guidance, such as future contacts, later market prices, warnings as to change of material or procedure, to bring about an effective betterment of future orders.

Variable, indirect expenses and overhead recoveries are similarly recorded, available and applied to the prime cost before submission.

This paper is submitted to emphasize that cost accounting may simplify a complexity of manufacturing into a keen estimating tool, providing Factory Management with a daily audit allowing for positive decision.



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W. J. MUNDELL, C.A.

Comptroller, Ogilvie Flour Mills Co. Ltd., Winnipeg, a past Dominion President of the Society, who is showing a keen interest in the proposed revival of the Western Chapters of the Society.

